Spot prices greater than $5 000/MWh

AUSTRALIAN ENERGY REGULATOR

Queensland 3 January 2006

Introduction

The AER is required to publish a report within 20 business days of the end of a week in which the spot price exceeded $5000/MWh, pursuant to clause 3.13.7 (d) of the Rules. That report should:

- describe significant factors contributing to the spot price exceeding $5000/MWh, including withdrawal of generation capacity and network availability;
- assess whether rebidding pursuant to clause 3.8.22 contributed to the spot price exceeding $5000/MWh;
- identify the marginal scheduled generating units; and
- identify all units with offers for the trading interval equal to or greater than $5000/MWh and compare these dispatch offers to relevant dispatch offers in previous trading intervals.

Description of the circumstances

On 3 January, demand in Queensland peaked at around 8200 MW, just below the all-time record. Flows from New South Wales totalled around 300 MW as the temperature in Brisbane approached 35 degrees. At 2.15pm, unit 2 at Millmerran tripped from 400 MW. As a result, a 5-minute dispatch price of $10 000/MWh occurred at 2.20pm. The spot price in Queensland for the trading interval ending 2.30pm was $5134/MWh.

The marginal scheduled generating units involved in setting spot prices above $5000/MWh and how those prices were determined by the market systems are detailed in Appendix 1.

Prices above $5000/MWh

The contributing factors to market prices can be categorised into:

- market forecasts;
- changes to network availability;
- rebidding, including changes to generation capacity; and
- offer prices.

Market forecasts. Figure 1 shows, for the trading intervals where the spot price was greater than $5000/MWh, actual price, demand and available capacity and compares those with the forecasts 4 and 12 hours ahead of dispatch.

Figure 1: Queensland actual and forecast information

2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	5133.82	37.24	18.97
Demand (MW)	8 198	7 911	7 748
Available capacity (MW)	9 230	9 356	9 634

Demand was almost 300 MW higher than forecast 4 hours to dispatch and 450 MW higher than forecasts made 12 hours to dispatch. The temperature in Brisbane reached 35 degrees, while the day ahead forecast was 2 degrees higher at 37.

Available capacity was reduced by more than 400 MW throughout the morning. This included a reduction in availability at Gladstone and Townsville of nearly 120 MW, 237 MW at Callide C and 120 MW across both units at Millmerran around midday.

Changes to network availability. Flows across the New South Wales to Queensland (QNI) interconnector into Queensland were between 244 MW and 418 MW during the trading interval, peaking at 554 MW at 2.20pm following the loss of the generator at Millmerran. These flows were higher than forecast.

Flows across DirectLink were between zero and 30 MW south – counter price. This was as a result of a direction by NEMMCO to an MNSP. Forecasts made close to dispatch were showing flows north at around 80 MW.

Figures 2 and 3 show the target flows and limits on the New South Wales to Queensland (QNI) and DirectLink interconnectors respectively between midday and 8pm on Tuesday 3 January.

Figure 2: QNI interconnector target flows including import and export limits

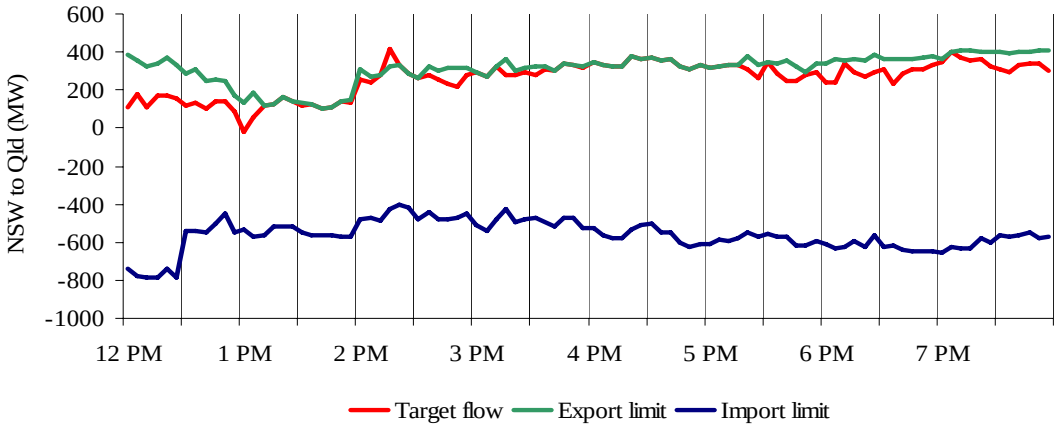
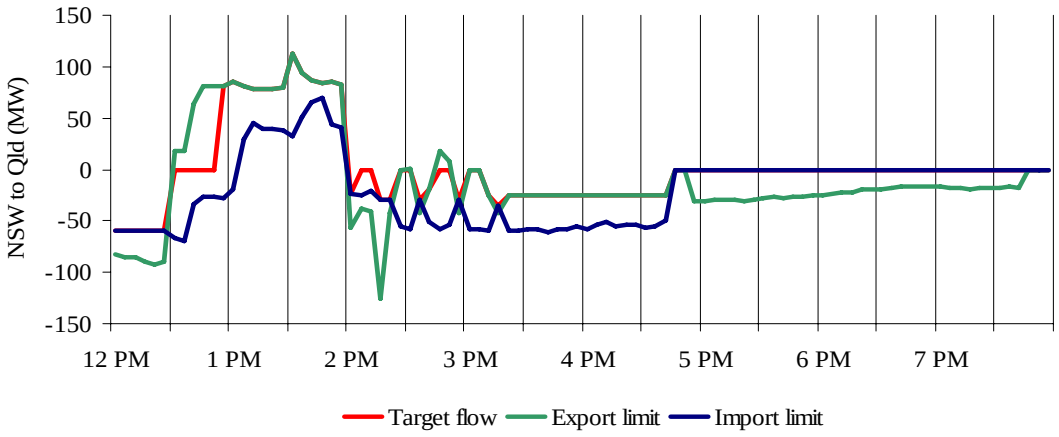


Figure 3: DirectLink interconnector target flows including import and export limits



Rebidding - Queensland. From 11.40am, Millmerran began reducing its available capacity across both units from 865 MW to a minimum of 720 MW by 1.15pm. The rebid reasons given were "Changed plant conditions" and "ACC (or air cooled condenser) backpressure limit". All of this capacity was priced at less than zero.

At 2.15pm, as station output began to increase towards 800MW, unit two tripped from 400 MW. A rebid shortly after reflected the reduction in available capacity. All of this capacity was priced at less than zero. The rebid reason given was "Unit trip". The 5-minute price increased to $10 000/MWh at 2.20pm, following the loss of this unit.

Earlier in the day, at 2.27am, Enertrade reduced the available capacity across Gladstone and Yabulu (Townsville) by 68 MW. The rebid reason given was "Extend/revise outage::change avail/MW distribution". At around 7am, Gladstone unit 6 was rebid as fixed load initially to 175 MW through until 5pm. This represented a reduction in available capacity of 105MW. Further changes to the loading level of unit 6 were made at 8.43am and 9.02am increasing output to 230 MW. The rebid reason given was "Off AGC::Fixed bid". The combined affect of these rebids was a reduction of almost 120 MW of available capacity priced at less than $60/MWh.

At 9.17am and 10.19am, a total of 237 MW of available capacity at Callide Power's Callide C unit 3 was removed. All of this capacity was priced at $10/MWh or less. The rebid reason given was "SCC or (submerged chain conveyor) Jammed". At 12.57pm, the available capacity at unit 4 was increased by 45 MW to 450 MW. The rebid reason given was "Overload test". This capacity was priced at $10/MWh.

At 1.07pm, Enertrade shifted 175 MW of capacity at Gladstone from prices of less than $60/MWh to $280/MWh. The rebid reason given was "Material changes in market conditions::change MW distribution". Following this rebid, prices in Queensland increased to $300/MWh. At 1.33pm, a further 30 MW of capacity across Gladstone and Mt Stuart was shifted from prices of less than $20/MWh to around $300/MWh. The rebid reason given was "Portfolio rearrangement::changed MW distribution". At 1.43pm, Enertrade rebid 160 MW of capacity at Oakey from prices of $260/MWh to more than $9000/MWh. The rebid reason given was "portfolio rearrangement::change MW distribution". At 2.18pm, over two rebids and immediately following the loss of 400 MW at Millmerran, 334 MW of capacity at across Gladstone and Mt Stuart was shifted from prices of around $300/MWh to below $15/MWh. The rebid reason given was "Portfolio rearrangement::Change in market conditions::change mw distribution".

Assessment. A combination of near record demand, reductions in available capacity, and the sudden loss of 400 MW at Millmerran were the most significant factors contributing to the spot price exceeding $5000/MWh. Based on the information available at this point in time, the rebidding requirements of 3.8.22 and 3.8.22A were satisfied.

Offer prices. Figures 5 to 7 present the capacity offered into the market within a series of price thresholds by participants with capacity at prices greater than $5000/MWh in Queensland on 3 January. Those participants are: CS Energy, Enertrade and Tarong Energy. These figures compare capacity offered into the market, when the spot price was above $5000/MWh, with other periods of the day. Spot price and dispatched generation are overlaid.

Figure 5: CS Energy closing bid prices, dispatch and region price.

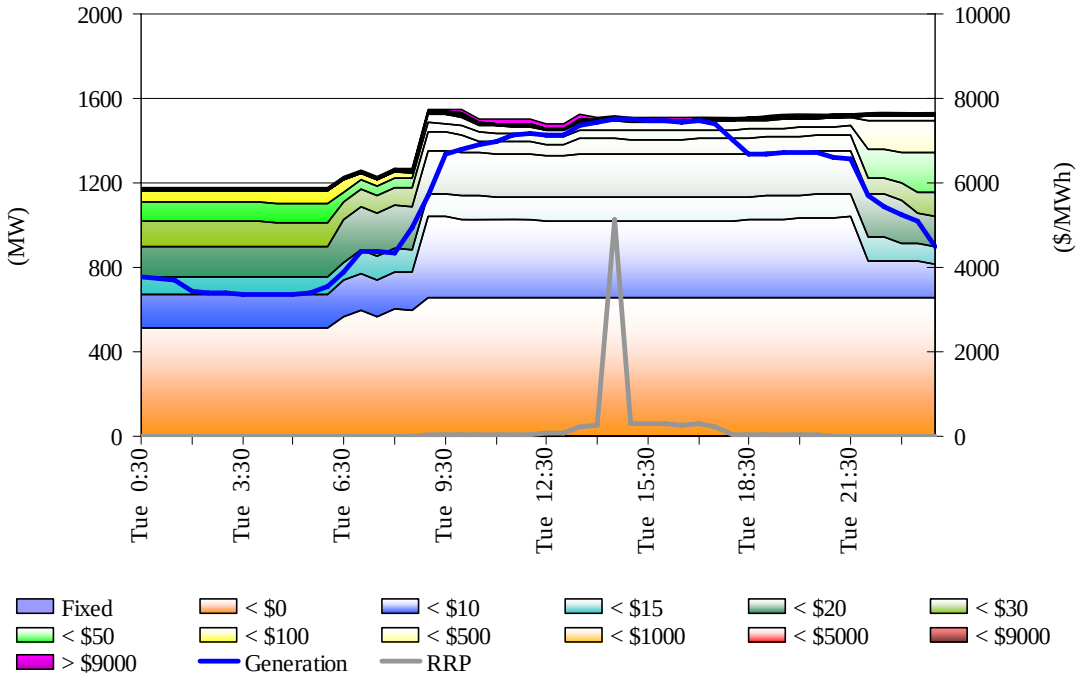


Figure 6: Enertrade closing bid prices, dispatch and region price.

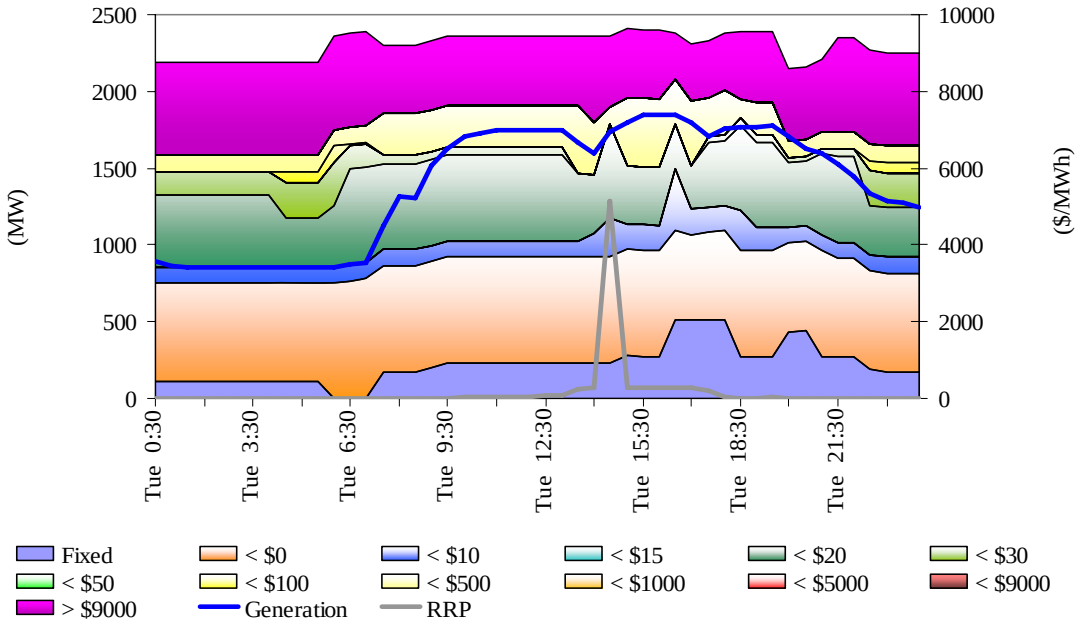
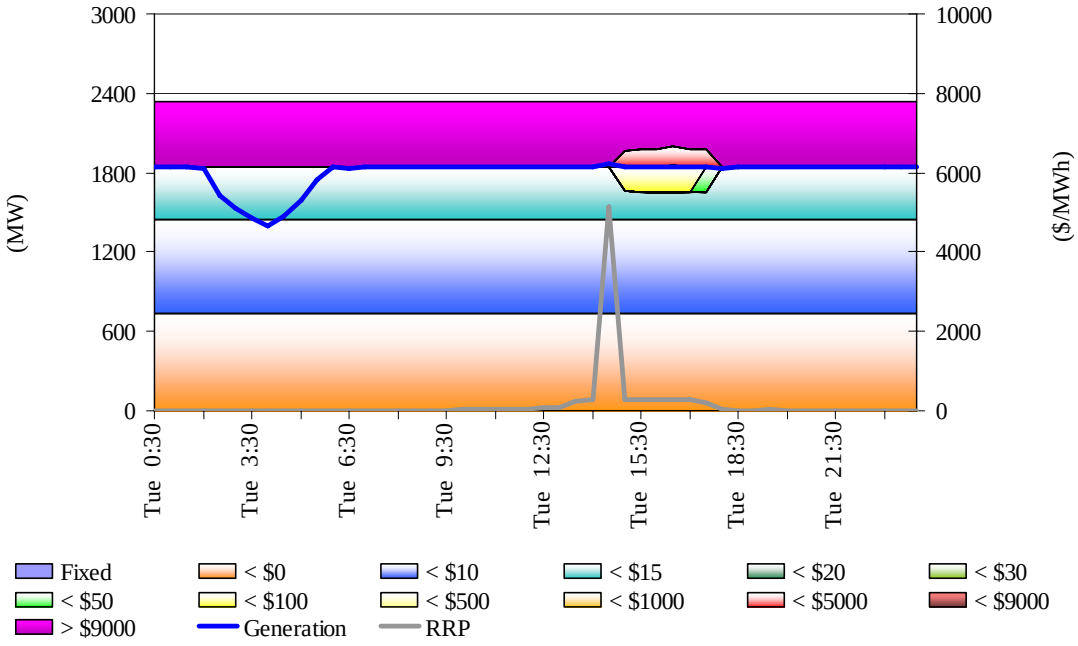


Figure 7: Tarong closing bid prices, dispatch and region price.



Australian Energy Regulator
February 2006

Appendix 1

The following tables identify for each trading interval in which the spot price exceeded $5000/MWh, every five minute dispatch interval price and the generating units, as published in the market systems, involved in setting the energy price. This information is published by NEMMCO[1]. Also shown is the energy or ancillary service offer price involved in determining the dispatch price together with the quantity and the contribution of that service to the total energy price. Dispatch prices greater than $10 000/MWh are capped. The 30-minute spot price is the time weighted average of the six dispatch interval prices.

Tuesday 3 January – Queensland 2.30pm

Time	Dispatch price($/MWh)	Participant	Unit	Service	Offer ($/MWh)	Marginal change	Portion ($/MWh)
14:05	299.64	Enertrade	GSTONE4	Energy	299.64	0.25	74.91
			GSTONE5	Energy	299.64	0.25	74.91
			GSTONE3	Energy	299.64	0.25	74.91
			GSTONE2	Energy	299.64	0.25	74.91
14:10	299.64	Enertrade	GSTONE5	Energy	299.64	0.25	74.91
			GSTONE4	Energy	299.64	0.25	74.91
			GSTONE2	Energy	299.64	0.25	74.91
			GSTONE3	Energy	299.64	0.25	74.91
14:15	299.64	Enertrade	GSTONE5	Energy	299.64	0.33	99.88
			GSTONE2	Energy	299.64	0.33	99.88
			GSTONE3	Energy	299.64	0.33	99.88
14:20	10 000.89	Southern Hydro	MCKAY1	Raise reg	1.39	1.00	1.39
		CS Energy	CALL_B_1	Raise reg	0.50	-1.00	-0.50
			CALL_B_1	Energy	10 000.00	1.00	10 000.00
14:25	9952.00	Tarong	W/HOE#2	Energy	9952.00	1.00	9952.00
14:30	9952.00	Tarong	W/HOE#2	Energy	9952.00	1.00	9952.00
Spot price	**$5133.82/MWh**						

[1] NEMMCO first published details on how the price is determined, for every dispatch interval, in June 2004. Documentation of this process can be found at http://www.nemmco.com.au/dispatchandpricing/140-0036.htm